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Canadian Industry Program for ENERGY CONSERVATION

2000/2001 SUCCESS STORIES

Natural Resources Canada

Office of Energy Efficiency

Ressources naturelles Canada

Office de l'efficacité énergétique

Canada

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To promote effective voluntary action that reduces industrial energy use per unit of production, thereby improving economic performance while participating in meeting Canada's climate change objectives.

A Record of Achievement

Over the past decade, CIPEC has proven with its results that co-operative, voluntary relationships between government and the private sector not only work, they can excel.

Between 1990 and 1999, CIPEC's mining and manufacturing sectors have achieved an average annual energy-intensity improvement of 2 percent per year – double CIPEC's improvement target of 1 percent per year. These improvements recorded by companies under the CIPEC umbrella have helped to reduce energy-related greenhouse gas (GHG) emissions to a level that is 1.9 percent below those in 1990; this despite substantially greater economic activity than a decade ago.

These strides are the result of the combined efforts of thousands of companies in CIPEC's 23 sectors. Today, our network comprises 43 trade and business associations, representing more than 4000 companies and approximately 95 percent of secondary industrial energy demand in Canada. Their contributions, both large and small, have combined to build a record of achievement that places Canadian industry in the forefront of efforts to overcome the challenges of global climate change.

Interest in further improving energy efficiency is thriving as manufacturing and mining companies increasingly recognize the direct relationship between energy efficiency and operating results. Initiatives from nearly every industrial sector across the land are improving energy efficiency, cutting GHG emissions, and helping Canada to meet its international climate change commitments.

In this document, we highlight the recent efforts of 12 companies that have made energy efficiency a key component of their strategic thinking – and a way of life in their operations. Their achievements are representative of the hundreds of success stories that are emerging within the CIPEC family. We present these stories in the hope that they will inspire others to advance energy efficiency programs within their organizations.

After all, it is only through the willingness of individual enterprises to embrace innovation and to adopt new methods and technologies that CIPEC will remain a shining example of voluntary, cross-sectoral co-operation. Through such innovation, the industrial sector will continue to do its part to help Canada achieve its objectives as set out in the Kyoto Protocol.

W. Warren Holmes

Senior Vice-President, Canadian Mining Operations Falconbridge Limited

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Chair, CIPEC Executive Board





Alcan Inc. on Target to Reduce GHG Emissions

at State-of-the-Art Facility

Alcan's new \$1.6-billion smelter in Alma, Quebec, is the company's first expansion in primary-metals production in two decades and marks the culmination of a rebuilding program begun in the late 1980s. On schedule to be at full production in the third quarter of 2001, the 400 000-tonne Alma smelter, which incorporates the latest energy efficiency technologies, will replace the company's nearby 75 000-tonne facility in Isle-Maligne, Quebec.

The massive plant will require 620 megawatts of power to operate, all of which will be provided by hydro-electricity. Half of the power will come from Alcan's own hydro-electric grid, with the balance provided by Hydro-Québec. Using hydro-electricity will enable the plant to emit only 15 percent of the greenhouse gases (GHGs) produced by typical smelters around the world that use fossil fuel-generated power.

In recent years, Alcan has devoted considerable effort to identify sources of GHG emissions throughout its operations. This has enabled the company to modify practices and introduce new, high-performance technologies at its smelters. The Alma facility carries on this tradition. In fact, by incorporating technologies that enable better control of anode effects, the Alma plant will emit only one tenth of the polyfluorocarbons produced at the Isle-Maligne facility. There is little doubt that the state-of-the-art Alma facility, in addition to the company's recently adopted TARGET program, will enable Alcan to take a giant stride toward its goal of reducing its GHG emissions.



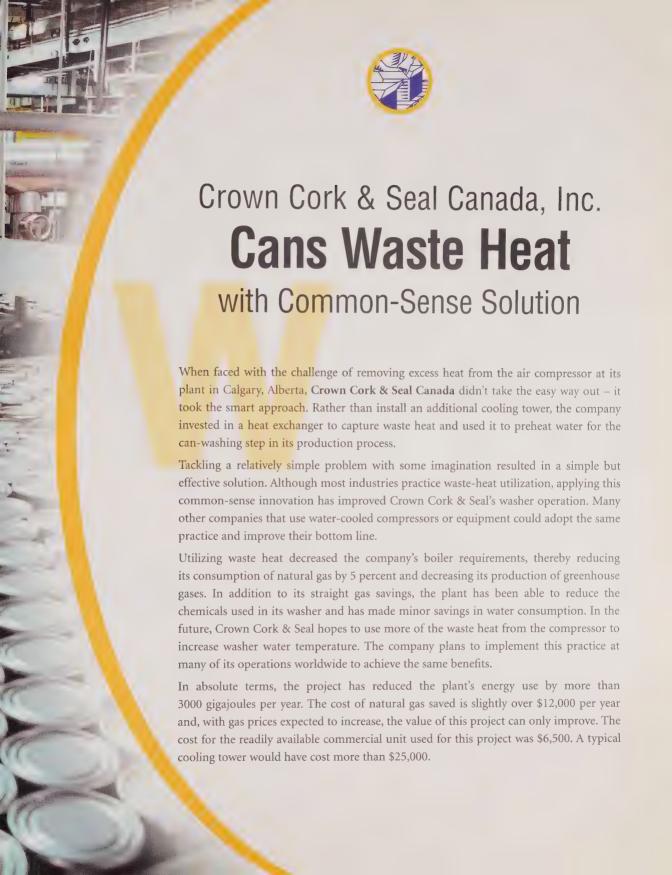


Riding the Wave of Energy Efficiency at

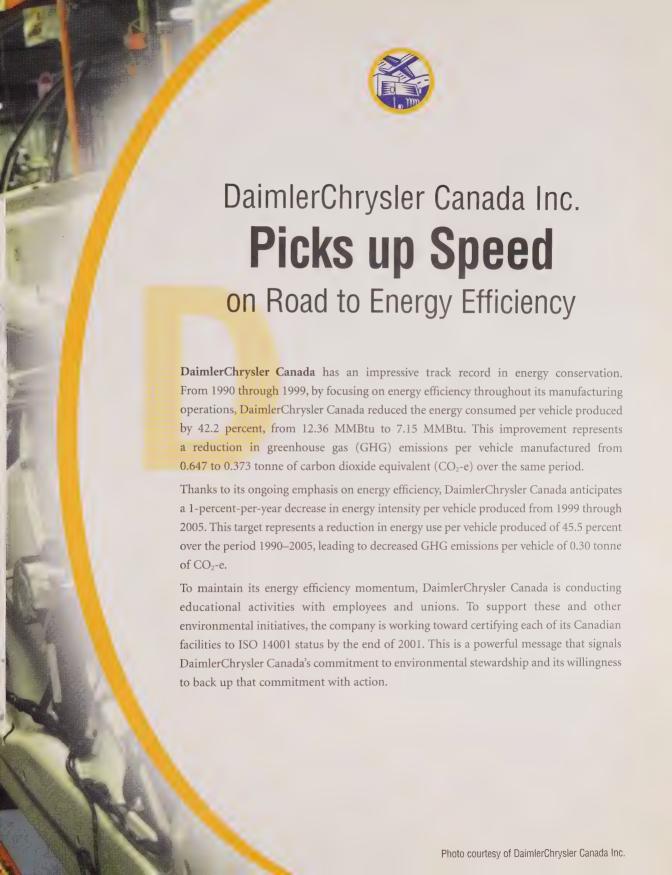
Connors Bros. Limited

Waste is a four-letter word at Connors Bros. The sardine cannery in Blacks Harbour, New Brunswick, has made reducing waste of all kinds a company-wide mandate, going so far as using once-discarded process by-products to create valuable fish meal, fish oil and fertilizer. Since it installed its first power factor controllers in the mid-1970s, the company has been committed to energy efficiency. For example, the company now pumps in seawater to use as a coolant in the plant's air-conditioning system, thereby dramatically reducing the demand for fresh water. A lighting retrofit program has been underway over the past three years, with T-8 fluorescent lamps and compact fluorescents installed in areas throughout the plant.

Beginning in 2000, Connors Bros. initiated improvements to its energy monitoring and tracking system. To further these efforts, the company participated in a "Dollars to \$ense: Energy Monitoring and Tracking" workshop offered through Natural Resources Canada's Office of Energy Efficiency. Meters have been installed at key points in the plant, enabling the company to use monitoring and tracking software to spot energy usage anomalies and identify waste instantly, thereby enabling swift corrective action to be taken. When it comes to energy efficiency, Connors Bros. believes that no project is too big or too small to undertake. From using PLC-equivalent microprocessors to improving air-exhaust efficiency, to upgrading with power-saving high-efficiency motors, the company continues to reduce waste wherever it is found.











Teamwork Leads DuPont Canada Inc.

to Score on Energy

Reduction Goals

DuPont Canada has successfully merged energy and environmental goals with its business objectives. More than 25 years ago, the company established its Manufacturing Energy Management Team (MEMT), an interdepartmental group that focused on improving energy efficiency throughout the company's Canadian operations. Thanks largely to MEMT's leadership, DuPont Canada consistently achieves – and often exceeds – its energy goals.

For example, a new high-temperature, heat-transfer fluid vaporizer installed at the company's plant in Kingston, Ontario, has a heat efficiency that is 20 percent greater than the equipment it replaced, resulting in savings of 20.4 terajoules per year. Because of this and other energy efficiency projects, MEMT achieved its 10-year goal of a 25-percent reduction in per-unit energy consumption – six years ahead of schedule. Since 1993, the team has documented more than \$20 million in cost reductions for DuPont Canada, and between the 1990 baseline year and 1999, it drove total energy consumption reductions of 28 percent.

The team's contribution to DuPont Canada's business performance has not gone unnoticed. Peter Chantraine, a tireless advocate of energy efficiency, chair of MEMT and a key member of CIPEC, was awarded DuPont Canada's highest honour, the Daedalus Award. His leadership and ability to see the big picture in the company's energy and environmental management has helped make DuPont Canada a leader in energy conservation and climate change.



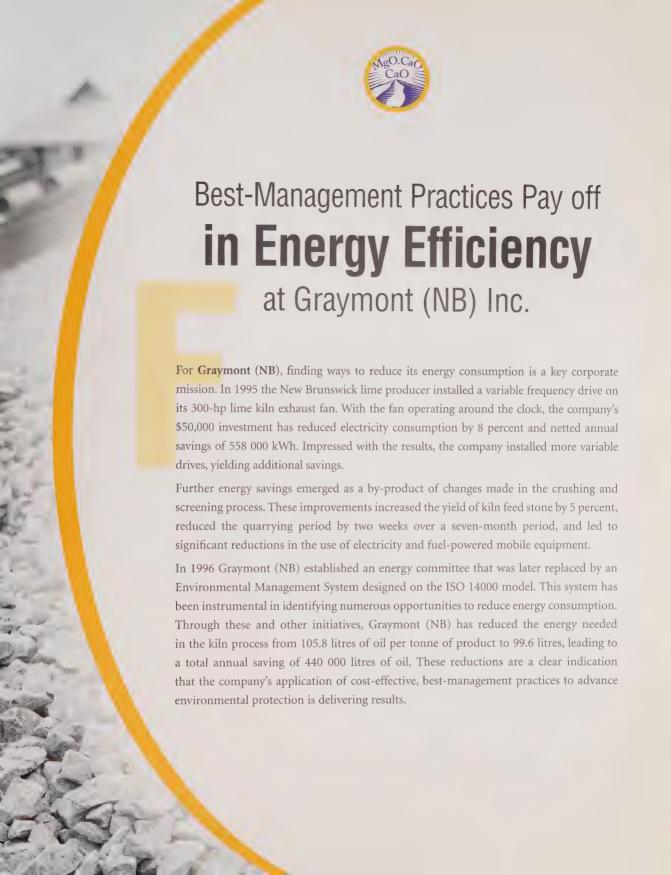


Foothills Creamery Ltd. Churns Energy Savings from Lighting Retrofit

Foothills Creamery has taken an activist approach to energy efficiency. The Alberta dairy manufacturer began serious energy-reduction efforts in 1998, when it retrofitted its Edmonton warehouse with new, high-efficiency lighting. The company replaced its existing 60-cm × 120-cm (2-ft. × 4-ft.) fixtures with T-8 lamps and reflectors that use PCB-free single electronic ballasts. Drawing only 58 watts, the new fixtures save 67 percent on the electricity used by each light. Foothills also replaced 240-cm (8-ft.) strip fixtures with a 90-cm × 120-cm (3-ft. × 4-ft.) lamp system with industrial reflectors that use 40 percent less energy and installed energy-saving motion sensors in key areas of the warehouse. The company's \$20,000 investment in the retrofit has led to better lighting throughout the facility, reduced labour costs and realized significant savings in electricity usage.

Encouraged by the results, Foothills Creamery agreed to participate in the Alberta Food Processors' Association's "Leading the Way in Canada" pilot project. This project aims to reduce energy consumption and greenhouse gas (GHG) emissions at participating companies by 25 percent. Through energy audits, "Leading the Way in Canada" has identified potential annual energy savings of \$6 million and related GHG-emissions reductions of 76 000 tonnes. For Foothills Creamery, energy savings from this project are another step forward on the road to better business performance.









Inco Limited Mines Savings with Energy Breakthrough System

Inco takes its leadership in the mining sector seriously. A mine-development and operating company with more than 10 000 employees and offices in 15 countries around the world, the company is a global leader in metal extraction and supply. Despite its size, operational diversity and international scope, the company has eagerly placed environment, health and safety among its highest corporate priorities and has annually backed its commitment by establishing aggressive energy action plans for its operations.

In 1999, to extend the scope and reach of its energy efficiency efforts, Inco introduced its Energy Breakthrough (EB) system. EB recognizes that energy management and reductions in greenhouse gas emissions require a system-wide approach with direct, defined responsibilities at each level of management. With Inco's commitment to targets that are among the most aggressive in Canadian industry, EB provides the necessary foundation for company-wide action.

Even before EB was introduced, Inco's energy efficiency efforts delivered results. The company's absolute emissions decreased from 939 kilotonnes of CO_2 -e in 1998 to 926 kilotonnes in 1999, despite a temporary, short-term increase in its energy and emissions indices. Moreover, Inco reduced its 1999 energy index by 9 percent relative to 1990, fully meeting the company's target of a 1-percent annual improvement. EB, with its formal structure and aggressive targets, should enable Inco to build on these improvements long into the future.



Blasts Energy Costs with Innovative Project

Innovative thinking at Lake Eric Steel Company is yielding big energy savings. The company is using steam that is produced by waste blast-furnace gas to power air compressors in the cryogenic air-separation plant at its smelter in Nanticoke, Ontario. Lake Eric Steel located the new plant between its boiler house and cooling towers, enabling it to make better use of the steam generation and distribution system already in place, reduce connection costs and utilize its existing capacity to turn blast-furnace gas into steam. To make the process work, the company invested in a new steam turbine, auxiliary equipment and an enlarged cooling plant.

This project demonstrates that wherever a process that produces high-grade waste heat requires oxygen or nitrogen, recovered energy can be used to drive the generation of the gases. This can be applied not only in smelting, but also in steel basic-oxygen furnaces, pulp and paper mills, textiles and chemical manufacturing.

As a result of this project, Lake Erie Steel is using a no-cost, previously wasted energy source to replace purchased energy. The results are impressive. The company has reduced its energy usage by 192 terajoules per year and is saving about \$1.7 million in annual operating costs. Moreover, the company has increased its blast furnace's productivity by 25 percent and has significantly reduced its NO_x and carbon dioxide emissions by 91 tonnes and 47 000 tonnes per year respectively.





Manoir Inc. Throws Cold Water

on Rising Energy Costs

To become a leader in the textile industry, Manoir, located in Saint-Laurent, Quebec, began from scratch. In 1994 the company built a dye house to contain new equipment that produces superior-quality fabric while reducing water and energy consumption.

With the dyeing process consuming three times as much water as the bleaching process, Manoir came up with two solutions to reduce its water use – a cool-rinse process and a pulsating rinse. The cool-rinse process allows for simultaneous rinsing and cooling, which reduces cycle times and energy consumption. The pulsating rinse dilutes the dye bath gradually while the machine is operating. This process uses 20 to 30 percent less water and takes less time.

The recently installed central heat recovery and exchange system is another key component in Manoir's energy efficiency program. The main aspect of the system is that drainage from the dye machine, when passed through the coiled heat-exchange station, exits at a cooler temperature. The cooling water used in the process is thus heated and stored for later use in reservoir tanks. This system ensures a virtually constant supply of water at 52°C, compared to municipal water temperatures of close to 0°C in winter and up to 7°C in summer. This not only affords considerable savings in energy but also enables Manoir to respect effluent temperature requirements.





Riverside Forest Products Limited Cuts Electricity

Consumption

Riverside Forest Products is serious about its commitment to significantly reduce its greenhouse gas emissions through energy conservation. An energy performance pilot project at its plywood plant in Armstrong, British Columbia, was co-funded by BC Hydro's Power Smart Services Program. This pilot study sought to assess potential energy savings opportunities in a typical wood-products manufacturing plant.

The study focused on power factor correction, veneer-drying systems and the plant's pneumatic conveying systems (fan-driven systems that move materials). It was discovered that motors in these systems were operating at low efficiency (from 27 to 50 percent), many fans were inefficient and air pressures in some systems were higher than necessary. All of these factors wasted energy and added to the plant's operating costs. A series of modifications will reduce the plant's annual electricity consumption by more than 2.1 GWh and generate annual savings of \$98,200. With an investment of \$326,000 needed to make the modifications, the payback period is just over three years.

The results of this energy performance contracting pilot project are significantly improving Riverside Forest Products' business performance and, through the Council of Forest Industries, encouraging other forest-products manufacturers that wish to follow this company's lead.





From Pulp Fiction to True Story – Energy Self-Sufficiency at Weyerhaeuser Canada Ltd.

Weyerhaeuser Canada has completed a \$315-million project at its pulp and paper plant in Prince Albert, Saskatchewan, with a number of environmental and economic benefits. These benefits were made possible by converting an existing recovery boiler into a wood-waste boiler, thereby reducing the company's costs for natural gas and electricity. The massive project included introducing state-of-the-art stack monitoring and control systems and a new wood-waste processing and delivery system. Thanks to the company's actions to promote energy efficiency, Weyerhaeuser was able to shut down a second recovery boiler and two gas-fired package boilers.

The impact of the project has been dramatic. The Prince Albert plant has achieved energy self-sufficiency, eliminated landfilling waste wood and dramatically reduced its greenhouse gas emissions. At the same time, the project is enabling the plant to convert its existing stockpile of wood waste into useful energy over a 10-year period, while consuming all wood waste generated at the site and by other area sawmills. The project provides maximum value from wood waste by reducing annual natural gas use by up to 70 percent and cutting purchased power requirements by up to 50 percent.

Aluminum

Alcan Inc.

Aluminerie Alouette inc.

Aluminerie de Bécancour inc.

Aluminerie Lauralco Inc.

Canadian Reynolds Metals Company Limited

Cement

Blue Circle Cement

ESSROC Canada Inc.

Inland Cement Limited

Lafarge Canada Inc.

North Star Cement Ltd.

St. Lawrence Cement Inc.

Tilbury Cement Ltd.

Chemicals

Chinook Group Limited – Sombra Plant

Degussa-Hüls Canada Inc.

DuPont Canada Inc.

Elementis Pigments Canada

MDS Nordion Inc.

Nacan Products Limited

NOVA Chemicals Corporation

OxyVinyls Canada Inc.

PolyOne Canada Inc.

Rohm and Haas Canada Inc.

Electrical/Electronics

ASCOlectric Ltd.

Broan-NuTone Canada

Camco Inc

Honeywell Limited

IBM Canada Ltd.

Nortel (Northern Telecom Limited)

Osram Sylvania Ltd.

Siemens – Technologies du Bâtiment Ltée (division Landis)

Vansco Electronics Ltd.

Food and Beverage

Alberta Processing Co., A Division of West Coast Reduction Ltd.

Andrés Wines Ltd.

API Grain Processors

Armstrong Cheese Company Ltd. - Alberta

Better Beef Ltd.

Big Rock Brewery Ltd.

Black Velvet Distilling Co.

Borden Foods Canada

Canada West Foods J.V. Inc.

Canamera Foods Canbra Foods Ltd.

Canyon Creek Soup Company Ltd.

Cargill Animal Nutrition - Camrose Plant Cargill Animal Nutrition - Lethbridge Plant

Casco Inc.

Champion Petfoods

Coca-Cola Bottling Ltd.

Family Muffins & Desserts Inc.

Foothills Creamery Ltd.

Garden Province Meats Inc.

Heritage Frozen Foods Ltd. H.J. Heinz Company of Canada Ltd.

Hub Meat Packers Ltd. - Sunrise Brand

Hubberts Industries

Kraft Canada Inc.

Labatt Breweries of Canada

Legal Alfalfa Products Ltd.

Lilydale Cooperative Ltd.

Lone Pine Cheese Ltd.

Maple Leaf Consumer Foods

Maple Leaf Pork - Alberta

Maple Leaf Pork - Ontario

Maple Lodge Farms Ltd.

McCain Foods (Canada) - Alberta, A Division of

McCain Foods Limited

Molson Breweries - Edmonton Brewery

Molson Canada - Ontario

Moosehead Breweries Ltd.

Nestlé Canada Inc.

Northern Alberta Processing Co., A Division of West Coast

Reduction Ltd.

Olymel I P

Parmalat Canada Ltd. - Alberta

Pepsi-Cola Canada Beverages

Prairie Mushrooms (1992) Ltd.

Principality Foods Ltd.

Ouality Fast Foods

Sakai Spice (Canada) Corporation

Schneider Foods

Sleeman Brewing and Malting Co. Ltd.

Sunrise Bakery Ltd.

Sun-Rype Products Ltd.

Transfeeder Inc.

Trochu Meat Processors

Unifeed Premix

Versacold Corporation

Westcan Malting Ltd.

Westglen Milling Ltd.

Weston Foods Inc.

Foundry

Ancast Industries Ltd.

Crowe Foundry Limited

Diversa Cast Manufacturing (A Division of Comtech Mfg. Ltd.)

ESCO Limited - Port Hope Operations

Eureka Foundry Corporation (A Subsidiary of ACI Canada Inc.)

Gamma Foundries Limited

Grenville Castings Limited

Wabi Iron & Steel Corporation

Wescast Industries Inc.

General Manufacturing

3M Canada Inc.

ABCO Property Management Inc.

Canadian Uniform Limited

Champion Feed Services Ltd.

Coyle & Greer Awards Canada Ltd.

Crown Cork & Seal Canada, Inc.

EMCO Limited - Building Products

Envirogard Products Ltd.

Escalator Handrail Company Inc.

Euclid-Hitachi Heavy Equipment Ltd.

Federated Co-operatives Limited

Ferraz Shawmut Canada Inc.

Fibrex Insulations, Inc. Garland Commercial Ranges Limited

Greif Containers Inc.

Imperial Home Decor Group Canada Inc.

Imperial Tobacco Limited Interface Flooring Systems (Canada) Ltd.

International Paper Industries Ltd.

Jones Packaging Inc.

Kindred Industries

Kodak Canada Inc.

LePage (Division of Henkel Canada Limited)

Maksteel Service Centre (Division of Makagon Industries Ltd.)

Marcel Lauzon Inc.

Metroland Printing, Publishing & Distributing Ltd.

Owens Corning Canada Inc. - Toronto Plant

Polytainers Inc.

PRO-ECO Limited

Regent Eco Canada

Sandvik Tamrock Canada Inc.

Sandvik Tamrock Loaders Inc.

Scapa Tapes North America

S.C. Johnson and Son, Limited

Simmons Canada Inc.

Soprema Inc. (usine de Drummondville)

Superior Radiant Products Ltd.

Teknion Furniture Systems Inc

VicWest Steel

Viskase Canada Inc.

Wabash Alloys Ontario

Wyeth-Ayerst Canada Inc.

Lime

Beachville Lime Limited

Chemical Lime Company of Canada Inc

Dundas Lime Limited Graymont (NB) Inc.

Graymont (OC) Inc.

Graymont Western Canada Inc.

Northern Lime Limited

Mining

Aur Resources Inc.

Barrick Gold Corporation - La mine Dovon (Division of

Cambior Inc.)

BHP Diamonds Inc.

Boliden Limited

Canadian Electrolytic Zinc Limited

Cominco Ltd.

Echo Bay Mines Ltd. - Lupin Operation

Falconbridge Limited

Fonderie Horne - Métallurgie Noranda inc.

Hillsborough Resources Limited

Hudson Bay Mining & Smelting Co., Ltd.

Inco Limited

International Minerals and Chemicals (Canada)

Global Limited (IMC Kalium Canada Ltd.)

Iron Ore Company of Canada

Mines et exploration Noranda inc. - division de Matagami

Mines Wabush (gérées par la Compagnie minière Cliffs inc.)

Newmont Canada Limited, Golden Giant Mine Noranda Inc. - Brunswick Mining Division

Noranda Inc. - Brunswick Smelter

Noranda Metallurgy Inc. (Canadian Copper Refinery)

Placer Dome Canada Limited

Quebec Cartier Mining Company

Syncrude Canada Ltd.

Teck Corporation

Petroleum Products

Amoco Canada Petroleum Company Limited

Canadian Tire Petroleum

Chevron Canada Limited - Burnaby Refinery

Enbridge Pipelines Inc.

Husky Oil Operations Ltd.

Imperial Oil Limited

Irving Oil Limited

Nova Corporation Parkland Refining Ltd.

Petro-Canada

Safety-Kleen Corp.

Shell Canada Products Limited

Suncor Energy Inc. - Sunoco Group

Ultramar Ltd. (Saint-Romuald refinery)

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The Clorox Company of Canada, Ltd.

Downeast Plastics Ltd.

Husky Injection Molding Systems Ltd.

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Potash Corporation of Saskatchewan Inc.

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- Cory Division
- Lanigan Division
- New Brunswick Division
- Patience Lake Division
- Rocanville Division

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Bowater Pulp and Paper Canada Inc.

Canfor Corporation

Cariboo Pulp and Paper Company Limited

Cascades Inc.

Daishowa Inc

Emballages Smurfit-Stone Canada inc. - usine de La Tuque

Eurocan Pulp & Paper Company Limited

F.F. Soucy Inc.

Kruger Inc.

Lake Utopia Paper

Marathon Pulp Inc.

Maritime Paper Products Limited

Nexfor Inc.

Norampac Inc. (Division of Cascades Inc.)

Norske Skog Canada Ltd.

Paperboard Industries International Inc.

(Division of Cascades Inc.)

Perkins Papers Inc. (Division of Cascades Inc.)

Riverside Forest Products Limited, Armstrong Division

Rolland Inc. (Division of Cascades Inc.)

St. Marys Paper Ltd.

Stora Enso North America, Port Hawkesbury Mill

Stowe Woodward Co. (British Columbia) (Division

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Michelin North America (Canada) Inc.

NRI Industries Inc.

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Algoma Steel Inc. AltaSteel Ltd.

Atlas Specialty Steels (A Division of Slater Stainless Corp.)

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Co-Steel LASCO

Dofasco Inc

Frost Fence & Wire Products Ltd.

GenFast Manufacturing Co.

Gerdau Courtice Steel Inc.

Hilton Works (A Division of Stelco Inc.)

Ivaco Inc. (Ivaco Rolling Mills)

Lake Erie Steel Company (A Division of Stelco Inc.)

Laurel Steel (Division of Harris Steel Limited)

QIT - Fer et Titane inc.

Slater Steel Inc. - Hamilton Specialty Bar Division

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Stelfil Ltée Stelpipe Ltd.

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Albarrie Canada Limited

Barrday Inc

Beaulieu Canada Inc.

Bennett Fleet (Quebec) Inc.

Britex Group (The)

C.S. Brooks Canada Inc. (Magog)

Cambridge Towel Corporation (The)

Cavalier Textiles

Coats and Clark Canada

Coats Bell

Collingwood Fabrics Inc. Collins & Aikman Canada Inc.

Consoltex Inc.

CookshireTex inc

Denim Swift

Fabrene Inc.

Glendale Yarns Inc

J.L. de Ball Canada Inc. LaGran Canada Inc.

Lincoln Fabrics Ltd.

Manoir Inc

Monterey Textiles (1996) Inc.

Nova Scotia Textiles, Limited

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Spinrite Inc. St. Lawrence Corporation

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Honda of Canada Mfg.

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Orion Bus Industries Inc. Oxford Automotive, Inc. - Suspension Division, Chatham

Polywheels Manufacturing Ltd.

Pratt & Whitney Canada Inc.

Presstran Industries

Prévost Car Inc.

Rockwell Automation Canada Inc.

Russel Metals Inc.

Sterling Trucks, A Division of Freightliner Limited

Toyota Motor Manufacturing Canada Inc.

TRW Automotive Volvo Cars of Canada Ltd.

Woodbridge Group (The)



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Office of Energy Efficiency Office de l'efficacité énergétique

Leading Canadians to Energy Efficiency at Home, at Work and on the Road

The Office of Energy Efficiency of Natural Resources Canada is a dynamic organization with a mandate to renew, strengthen and expand Canada's commitment to energy efficiency in order to help address the challenges of climate change.